

www.scdhec.gov/lwm/rcc

This handbook was developed by the

- S.C. Department of Health and Environmental Control's Office of Solid Waste Reduction and Recycling, the
- S.C. Energy Office and the S.C. Department of Commerce's Recycling Market Development Advisory Council.

State of South Carolina

Office of the Covernor

The South Carolina Resource Conservation Challenge asks all state-supported institutions to adopt a resource conservation ethic. This ethic includes finding ways to operate more efficiently, consume less energy, create less waste, purchase more wisely, and use more products made with recycled content and that are recyclable.

This guidebook contains some easy-to-follow programs and ideas that can help your agency or institution save real dollars while protecting our state's environment. There are examples of success stories that may be applicable to your organization; I encourage you to follow these examples and look for your own ways to promote resource conservation throughout your organization.

In addition to this guidebook, the South Carolina Resource Conservation Challenge Task Force has developed an informational web site that state agencies and institutions can consult in their efforts to adopt and implement sustainable operating practices. That site is www.scdhec.gov/lwm/rcc.

During the past year, the Task Force has addressed a number of waste and energy concerns raised by state agencies and our public K-12 and higher education system. The Task Force's efforts have ranged from working on state purchasing contracts for recycling services to promoting loan opportunities for public institutions for replacing inefficient lighting, heating, and air systems.

The Task Force's members are ready to work with their peers from other agencies and institutions to foster increased resource conservation. Please take advantage of your colleagues' expertise as your organization moves forward with this important undertaking.

Thank you for your support of the South Carolina Resource Conservation Challenge.

The S.C. Resource Conservation Challenge

The S.C. Resource Conservation Challenge is about new and improved ways for state agencies, colleges and universities, schools and school districts, and local governments to conserve natural resources, protect the environment – and, perhaps, save money in the process.

The Challenge – modeled after the U.S. Environmental Protection Agency's Resource Conservation Challenge and customized for South

Carolina – can be met in a variety of ways. Those ways include implementing or improving programs on waste reduction, recycling, sustainable development and energy conservation.

The Challenge begins with the belief that each of us needs to adopt a resource conservation ethic. Each of us must operate more efficiently and purchase more wisely. If each of us meets the Challenge, we will have a safer, cleaner environment and more economic growth.

Accept the challenge.



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Waste Reduction & Recycling

Getting Started...

In order to be successful, waste reduction and recycling programs must be planned carefully to meet an organization's particular needs. There is no "one-size-fits-all" approach to waste management. Here are some key steps in starting a waste reduction and recycling program:

- get support from management with involvement from every employee;
- organize a waste reduction task force and appoint a waste reduction and recycling coordinator;
- establish a policy statement for your organization;
- assess current waste disposal operations and identify what can be reduced, reused and recycled; and
- communicate, educate and motivate your employees.

MANAGEMENT SUPPORT/EMPLOYEE INVOLVEMENT

A waste management program cannot be successful without top management's support. Employees must feel that it is part of the "corporate culture" before they will change their behavior. Endorsements from management are critical as program goals are announced and collections begin. It also is important to communicate with employees the benefits of adopting waste management programs, which may include lower disposal costs, potential energy savings, improved efficiency and enhanced public image, to name a few.

Start with some simple waste reduction and recycling activities that will show results quickly and help establish your program. Be sure to communicate these early successes and compliment employees on their efforts to build a solid foundation for your waste

reduction program.

Once you have gained support from management, it is critical to get representatives from all areas of the organization to share their ideas and opinions about how to reduce waste.

After all, they are the ones who know their job best and can give the most reliable information about the materials they use.

TASK FORCE ON WASTE REDUCTION

This team, made up of volunteers from each department, is responsible for planning, implementing and maintaining the waste reduction program. It is important to get its input before putting a plan together. The team members also serve as ambassadors for your program in their respective departments, providing a structure for communicating the program's goals and objectives to their peers. The team approach also provides an opportunity to build camaraderie among departments as well as spreads the work among more people. A waste reduction and recycling coordinator should be selected to lead this group and serve as the liaison between top management and employees.

POLICY STATEMENT

The waste reduction task force should develop a policy statement to be adopted by top management. This statement should be communicated throughout your organization using a variety of methods including employee manuals, new employee orientations, e-mails and newsletters, bulletin or message boards and the Intranet.

Having a formal policy statement in place further legitimizes the efforts of the waste reduction team and lets employees know they need to be actively involved in helping your organization reach its waste reduction and recycling goals.

COMMUNICATE, EDUCATE AND MOTIVATE

Regular communication with employees about the implementation and progress of the waste reduction program is critical to its success. Frequent reminders help keep the issues of waste reduction and recycling in employees' consciousness and improve chances for changing their behaviors. Be sure to post signage in work areas as well as break rooms and other areas where employees congregate.

Use existing communication tools, whether a newsletter or Intranet site, to reinforce messages on what is working well with your program, what areas could use some improvement and how to make those changes. And be sure to include success stories and cost savings information whenever the opportunity arises.

Education is an ongoing process and you must remain committed to getting the word out about how important efficient waste management is to the overall bottom line.

Waste Assessment

Once you have a team and policy in place, you will need to assess your current waste disposal operations and begin identifying what can be reduced, reused and recycled. You will need to look at your current waste hauler's records for what and how much has been removed from your facility as well as determine how much it costs.

You may want to review your organization's purchasing records to gain perspective on the flow of materials at your facility. This helps the team determine what is brought into your facility and leaves only as trash. Examples may include packaging materials (cardboard boxes, pallets, shrink wrap, etc.), food service items (paper or styrofoam plates/cups) and office paper.

Next, designate a waste reduction team to physically inspect the waste created on a given day. Since this exercise will require the team to physically sort through your trash, puncture-resistant gloves and old clothes are necessary. To conduct the inspection, spread a large plastic sheet and dump the day's waste onto it. Use a scale, if possible, to weigh materials and estimate the percentage of each category in the waste stream. If you produce a large amount of waste on a daily basis, use a representative sample of your trash containers.

Conducting a waste audit may not seem all that important at first. Some might even think just looking into the trash dumpster should suffice. But it is an effective way to gain a better understanding of what your employees are discarding and determine what waste can be reduced by implementing a reduction, reuse and recycling program.

Now that the waste reduction team has a better understanding of what waste you are generating, it is better equipped to determine what steps to take to reduce, reuse and recycle. Here is an easy six-step approach to follow:

- Get the facts. Use the results of your waste audit to determine what waste can be prevented, what can be reused or recycled and what waste still may need to be disposed of.
- 2. Involve staff. Getting management buy-in and setting up a waste reduction team are major steps to implementing a successful program. Still, you need to encourage all employees to participate to get the best results. Ask employees for their ideas about ways to reduce

waste. Provide suggestion boxes or use occasional department meetings to brainstorm about waste prevention and recycling opportunities.

- 3. Plan thoroughly. Begin by prioritizing the elements of the waste stream for action. Ideally, every element will be targeted for reduction/recycling but, in the beginning, it is best to concentrate on the materials that make up the greatest portion of your waste stream. When targeting a type of material, consider:
 - a. How much is generated?
 - b. Can the waste be reduced, reused or recycled?
 - c. Are there regulations or state laws (i.e., landfill bans, recycling mandates) that need to be considered?
 - d. What are the economic factors at play? Are there cost savings from reducing waste? Are recycling revenues significant? Are markets available for your materials?
- 4. Educate staff. Once your plan is in place, all employees and managers must be educated about waste reduction and recycling processes. Keep them informed and involved at all steps in the development and implementation of a program. Employees can be a valuable resource in identifying ways to improve the program.

Keys to a Successful Recycling Program

- Determine what recyclables are in the waste stream by conducting a waste assessment.
- Research markets for those recyclables (and quantities) that you generate.
- Determine space, container and equipment needs.
- Contact your waste hauler and negotiate rates to include recycling.
- Educate and promote.
- Monitor recovery rates, revenues and costs.

5. Focus on results. It is important to establish a record-keeping system to track the effectiveness of the program. Track your savings from waste reduction and recycling. For instance, you may experience savings in waste collection fees because you have diverted 20 percent of your materials for recycling, but labor costs for collecting, preparing and storing the recyclables may increase your operating expenses. By recording these measures you can see if the program is economically beneficial. Remember that typically waste management costs are rising and an investment now to reduce waste is likely to reap benefits and savings in the future.

The waste reduction team should continue tracking waste and identify further opportunities for waste reduction and recycling. Ultimately, the success of your program should be measured by the amount and quality of waste diverted from disposal. It is important to establish a baseline measurement of waste destined for disposal and then regularly determine your success in reducing and/or recycling waste.

- 6. Determine costs. Analyzing savings in waste disposal costs is another way to quantify your program results. To find total disposal costs:
 - Add together custodial services, garbage bills and confidential destruction costs.
 - b. Subtract revenue from current recycling programs.
 - c. This amount equals your total disposal cost.

If you lease your building and garbage disposal is part of the monthly rent, you may want to see if the landlord will offer a discount if disposal expenses are reduced through your waste reduction and recycling efforts.

Elements of a Waste Reduction & Recycling Program

- Get management support.
- Organize a task force.
- Establish a baseline to measure progress.
- Set specific goals for volume and weight reduction.
- Commit to accurate accounting and reporting.
- Evaluate your program regularly.
- Educate and motivate staff.

7. Use positive reinforcement. Positive reinforcement of your program's success and employees' dedication are key components for success. Developing a sense of ownership and pride in the efforts will encourage many to continue reducing waste and recycling.

You may want to consider incentives to keep employees motivated, such as lunch with the boss, a special parking place,

recognition in employee communications or

an e-mail thank-you note. Better yet, give each employee a reusable mug to reinforce the waste reduction message. Be as creative as you can.

Waste Reduction

A waste reduction program can be simple, involving low-cost techniques such as improved inventory control, operations and maintenance. There are many ways to practice waste reduction – or prevent waste all together. Below are some easy-to-implement waste reduction strategies that can be adopted as policy. Be sure to communicate these policy changes with employees to maximize their effectiveness.

REDUCTION STRATEGIES

- Store documents electronically instead of making hard file copies.
- Route memos instead of making duplicates for each person.
- E-mail correspondence when possible.
- Use double-sided copying.
- Use reverse side of drafts for note paper and incoming faxes.
- Reuse file folders by reversing them or re-labeling them.
- Fax documents without cover sheets use sticky notes when possible.

- Use hardwood or plastic pallets versus softwood. Hardwood pallets can be reused five or six times and plastic pallets can be reused hundreds of times. Consider the cost savings of reusing pallets.
- Work with all suppliers to return shipping materials, crates, cartons and other packaging for reuse.
- Return toner cartridges from ink jet and laser printers for refurbishing.
- Shred mixed paper and let the shipping department use it for packing material.

PURCHASING

The person responsible for purchasing supplies should be directly involved in the waste assessment process and in developing the overall waste reduction program. Implementing good operating procedures will lead to waste reduction with little effort. These include material tracking and inventory control, scheduling shipments and efficient material handling and storage. Encourage suppliers to reduce their packaging and to use recycled materials wherever feasible.

Watch over-ordering to save on unit cost – it may lead to careless use of supplies. Also, products with a limited shelf life may go bad.

Order one or two copies of magazines and newspapers and encourage employees to share them or place them in a lounge or employee lunchroom. Donate past issues of magazines to nursing homes, hospitals and schools. A local library or college may accept trade magazines that they do not receive. Old newspapers can be reused by the mail room for packing material. It may be useful to survey employees on preferred newspaper subscriptions.

Recycling Tip

If you produce materials that are recyclable but do not produce a sufficient quantity, consider working with a neighboring office or business. The local Chamber of Commerce or recycling coordinator may be able to identify other area businesses that are interested in recycling. You also may designate a staff person to take recyclables to a community drop-off center.

LEASING COMPUTERS ON STATE CONTRACT

Publicly supported institutions can take advantage of a state-term contract for leasing personal computers (PCs) as a way of keeping the latest technology available to their staff while, at the same time, removing the responsibility of end-of-life management of old and unwanted computers.



The number of leased PCs in use throughout state government continues to increase according to the S.C. Budget and Control Board's Information Technology Management Office (ITMO).

With growing awareness of the potential environmental concerns posed by the improper disposal of old computers, many state agencies, colleges and universities, public schools and school districts, and local government offices have held on to antiquated equipment. As a result, the idea of leasing PCs may become even more popular.

There is a cost associated with the proper end-of-life management for electronics. With toxic materials like lead, mercury, cadmium and other potentially hazardous components, old computers and other unwanted electronics can be considered hazardous waste and can be costly to dispose of in South Carolina.

In South Carolina recycling is the preferred waste management solution for all materials covered under the Universal Waste Rule including rechargeable batteries, fluorescent bulbs (and other mercury-containing bulbs) and even pesticides. Recycling also is the preferred management option for electronic waste.

If a government agency or school leases its computers, it can avoid having to contract with a recycler by simply returning its used computers to the manufacturer for reuse or recycling.

Visit www.scdhec.gov/lwm/rcc to learn more about leasing PCs on state contract.

OTHER WASTE REDUCTION TIPS

If you generate a lot of cardboard boxes, consider reusing them for your own shipping needs; giving them to employees, moving companies or mail distribution businesses; or returning them to the distributor for reuse. Of course, you always could consider recycling cardboard. In many instances, cardboard is recycled at a high rate because of its monetary value.

Purchase needed materials in bulk and use reusable dispensers that can be refilled.

Food service departments should consider donating leftover food to shelters for the needy. Or they could begin composting food waste. The use of reusable cups and self-serve dispensers for beverages, rather than single-serve items, can eliminate a great deal of material requiring recycling or disposal.

Recycling: Beyond the Basics

FLUORESCENT BULB RECYCLING

You see them everywhere – in local businesses, large retailers, hospitals, schools, grocery stores, offices and government buildings. Fluorescent lighting is a common fixture in many buildings thanks in part to its energy efficiency and the cost savings it provides.

Most of us know that fluorescent bulbs are energy-efficient — using about one-fourth the energy and lasting about 10 times longer than incandescent bulbs. That efficiency saves energy and money. Many of us, however, are unaware that fluorescent bulbs as well as other types of energy-efficient lighting contain mercury — which is toxic. When broken, compacted, crushed or disposed of improperly, fluorescent bulbs may release mercury into the air, water and soil posing a significant risk to human health and the environment.

It is important to note that all generators of spent fluorescent bulbs are responsible by law for their proper disposal. Building owners and property managers need to ensure they are doing their part to limit mercury exposure and properly handle fluorescent bulbs at the end-of-life. The recycling of these bulbs may limit your organization's liability and reduce the need for enforcement action. Clearly, the best management option is to recycle the bulbs.

Again, each publicly supported organization must properly manage spent fluorescent lighting. Several companies provide collection and recycling services for a fee. Fees may vary based on transportation costs and volumes for pick-up. Once the bulbs are properly recycled, the generator should receive a certificate of recycling.

When purchasing lighting for your building, look for bulbs that not only provide the greatest energy efficiency and longest life, but also contain the lowest possible mercury content. If the vendor you purchase bulbs from doesn't provide recycling information, there are a number of other resources available to help you properly manage your bulbs. See the Technical Assistance Fact Sheet "Proper Management of Universal Waste Lamps" at www.scdhec.gov/recycle/html/pubs.html and the "Other Resources" section at the end of this handbook.

COMPOSTING

Another area that has seen increasing interest by those wanting to reduce waste is composting. Organizations that generate food waste through cafeterias or break rooms may be able to send this material to a municipal or private compost program. Or if there is space available and committed personnel to manage it, an on-site composting program may be warranted.



Composting also can include yard trimmings collected from landscape maintenance and some sludge materials. The benefit of composting is a value-added product that can be used in landscape applications at considerable savings compared to buying retail compost products.

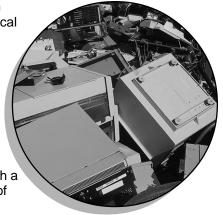
To learn more, call DHEC's Office of Solid Waste Reduction and Recycling at **1-800-768-7348** or visit www.scdhec.gov/recycle/html/compost.html.

STATE ELECTRONICS RECYCLING CONTRACT

South Carolina generates a large amount of surplus electronic equipment. Much of this equipment is considered environmentally hazardous and

must be managed and disposed of in compliance with federal, state and local laws and regulations.

To assist in the proper management of these items, a state term contract for the management of unwanted surplus electronic equipment was awarded to Global Investment Recovery, Inc. (1-800-933-0319 or www.girpm.com) by ITMO. The purpose of the contract is to establish a process for the proper management of surplus electronic equipment.



School districts, colleges, cities, counties, towns, state agencies and other governmental entities may utilize this contract as authorized by their governing laws, regulations and ordinances, after the equipment has been declared surplus by their appropriate office.

For more information, call DHEC's Office of Solid Waste Reduction and Recycling at **1-800-768-7348**.

The Recycle Guys Awards Program

Each year, the S.C. Department of Health and Environmental Control's Office of Solid Waste Reduction and Recycling honors the top recycling programs, projects and people in South Carolina.

The **S.C. Army National Guard** (SCARNG) was named the 2004 Outstanding State Agency Waste Reduction and Recycling Program for developing a successful antifreeze recycling program at installations statewide. In 2004, more than 3,000 gallons of antifreeze were processed. This represents nearly twice what was collected the previous year. Collected antifreeze is re-refined and used in the SCARNG fleet. Since the program's inception, the antifreeze recycling effort has resulted in a cost savings of more than \$9,000 in avoided waste disposal fees as well as nearly \$11,000 in avoided expenses if they were to buy new antifreeze.

Winthrop University (Winthrop) was named the 2004 Outstanding College or University Waste Reduction and Recycling Program. Winthrop was selected because of its overall efforts to expand on-campus waste reduction and recycling programs. A pilot beverage container collection program was made permanent and expanded to all on-campus housing.

The end of semester move out program, another pilot project, also was implemented campus-wide. In addition, the University's composting program continued to accept food scraps from dining facilities, plants from the campus greenhouse and yard trimmings. Winthrop also formed a partnership with local Harris Teeter stores to accept leftover produce. Nearly 12,000 pounds of produce were composted last year. As part of

their educational efforts, Winthrop also offered a course, for credit, titled "Recycling in the Residence Halls."

Markets for Recyclable Materials

- Work with local markets. Consider transportation and personnel costs when hauling materials. It is important to compare net rather than gross revenues.
- **2. Get the facts.** Designate in your contract the responsibilities for both the vendor and your organization.
- Network. Talk to others about their markets. Consider cooperative marketing to increase volumes and receive better prices.
- 4. Deal with reputable recycling vendors. Companies with established track records are the safest. They often provide technical assistance.
- Develop long-term relationships with buyers. Long-term relationships often result in better service and prices.
- **6. Beware of price optimism.** When checking prices paid for recyclables, realize markets change and prices fluctuate.

Past State Agency Recycling Program Award Winners

- S.C. Department of Corrections
- S.C. Department of Health and Human Services
- Greenville County Health Department
- S.C. Department of Alcohol and Other Drug Abuse Services
- S.C. Department of Education
- S.C. Department of Transportation

Past College/University Recycling Program Award Winners

- University of South Carolina (USC) – Columbia
- Central Carolina Technical College
- Medical University of South Carolina
- Winthrop University
- Furman University
- Clemson University
- Trident Technical College
- USC Aiken

- Be flexible. If a market collapses, seek other options. Your local recycling coordinator may be able to help. For contact information, visit www.scdhec.gov/recycle/html/counties.html.
- 8. Close the loop. The best way to sustain and strengthen recycling markets is to purchase products made with recycled material. Collecting and processing recyclables to be made into other products are the first steps in the recycling loop. Buying these products completes the loop.

Buying Recycled Content Products

In order to establish a good program for buying recycled content products, organizations should include the following key elements.

- Commitment to Buy: Organizations must establish a policy to buy recycled content products. This commitment is necessary to ensure that manufacturers of recycled content products continue to exist.
- Review Purchasing Specifications: All specifications must be reviewed to eliminate prohibitions or limitations against recycled content products.
- 3. Common Definitions and Percentages: You may consider using existing minimum recycled content standards and definitions, such as those established by the U.S. Environmental Protection Agency. There also are numerous Web sites dedicated to promoting recycled content products and many have information on the product performance and price.
- 4. Variety of Products: Even though paper makes up the largest percentage of the waste stream, buying recycled content paper alone will not solve the solid waste problem. There are a wide variety of

Looking for Markets?

The South Carolina Materials Exchange (SCME) is a free on-line service that seeks to reduce waste by facilitating the exchange of reusable materials. It serves as a "matchmaking service" that provides users access to information on materials available or wanted. Visit www.scdhec.gov/scme.

The on-line Directory of South Carolina Recycling Businesses is available at www.sccommerce.com/SearchRecycling.aspx.

- recycled content products available, including re-refined motor oil, office supplies and furniture, auto parts, plastic containers, wallboard, carpeting, compost, insulation, solvents and rubber products.
- 5. Testing Products: Your waste reduction team may want to test recycled content products to determine how they work on certain equipment or for particular end uses. Consider doing "blind" testing to avoid a bias for virgin content products over those with recycled content. You may be surprised to learn that the quality of recycled content products has improved over the years and, in many cases, their performance is identical to, if not better than, their virgin material counterparts.
- 6. Phased-in Approach:
 Organizations can phase in the use of recycled content products so that users can adjust to the program.
- 7. Price Incentives: Recycled products may be more expensive than virgin products due to tax policies, price fluctuations or economies of scale in production or end use. Organizations may adopt price preferences for recycled products, lifecycle costing or use of set-asides (where recycled products are purchased separately). Any extra funds spent should be viewed as an investment in market development, much like the other parts of establishing your recycling program.
- 8. Cooperative Purchasing: In some cases, it makes sense for organizations to work together to buy recycled content products. These cooperative purchases expand the volume of products

Key Elements of Buying Recycled Products

- Make a commitment to ask for the availability of recycled content products from vendors and purchase these products for your organization.
- Consider implementing a price preference for recycled content products and let employees know of this preference.
- Do your research evaluate product performance as well as price and availability when making purchasing decisions.
- Consider working with other organizations to purchase recycled content products cooperatively – increased quantities will lower unit costs and create savings for all involved.

purchased, reduce unit costs of recycled products, help ensure availability and establish common definitions and percentages. Examples of potential co-ops include state and local governments establishing regional purchasing programs, non-profits and community

groups buying together and smaller businesses establishing collaborative programs. By working together, all participants in cooperative purchasing may be able to save valuable time and resources.

9. Other Considerations:

Organizations committed to buying recycled content products should solicit and publicize bids from manufacturers and vendors of recycled content products. As mentioned before, manufacturers and vendors provide a wide range of recycled content products and it is up to the purchasing agent to express the organization's preference for recycled content products.

Keep good records of the recycled content products that your organization purchases.

State Agency and College/University Recycling Report

The S.C. Solid Waste Policy and Management Act (Act) became law on May 27, 1991. The Act was amended on October 3, 2000 to require state agencies as well as colleges and universities to measure waste reduction. recycling and buying recycled activities and report those activities by September 15 each year to DHEC. In turn, DHEC is required to compile all the submitted reports into a comprehensive report that is submitted to the Governor and Legislature by November 1 annually.

Get WasteWise!

WasteWise is a free, voluntary U.S. Environmental Protection Agency program through which organizations eliminate costly waste – benefiting their bottom line and the environment.

For more information, visit <u>www.scdhec.gov/</u> recycle or call 1-800-768-7348.



Energy Conservation

Everyone has a role to play in promoting energy efficiency. And if everyone works together, the life of our energy resources can be extended. Commercial buildings use 18 percent of the total energy consumed in the United States according to the U.S. Department of Energy. Given that, businesses, government agencies and others can experience several benefits including saving money on power bills, conserving non-renewable fossil fuels and lessening the environmental impact of greenhouse gas emissions by reducing their energy consumption.

Energy savings can be accomplished in many ways – from turning off the lights when leaving the office or conference room to a comprehensive overhaul of a building's heating, ventilation and air conditioning unit (HVAC). Many building owners consider energy costs a fixed expense when, in fact, with a few well-placed changes, the cost savings can be significant and directly affect the bottom line.

The Benefits

There are reduced costs associated with energy conservation, although it is important to take into account the initial investment in replacing outdated lighting and HVAC systems. Typically, this pays for itself in two to three years and has subsequent returns on investments of 30-40 percent. Another reason to think about energy conservation is pollution prevention. Carbon dioxide emissions from energy consumed by the commercial sector have increased to nearly 30 percent since 1980 according to www.GreenBiz.com. By becoming environmental stewards and reducing unnecessary energy consumption, organizations can protect the precious air we need to survive.

Develop an Action Plan

Set an energy policy, either as part of your waste reduction and recycling policy or as a stand-alone statement that outlines your commitment to reducing energy consumption. Consider a policy that includes calculating energy savings as a part of your daily business decisions and operations. Like the waste reduction and recycling policy, management support is essential to show employees your organization's commitment. In addition, encourage employee participation by asking them to share their ideas on how to save energy.

Next establish a baseline for your building's energy consumption. Review the past year's power bills to determine what is being spent on energy and see if there are any trends based on time of year and increases or decreases in the amount of power used. Consider having an energy audit.

S.C. Energy Office Programs

The S.C. Energy Office (SCEO) has programs to help save energy, money and natural resources.

• CONSERFUND – The SCEO's low-cost financing program for energy efficiency improvements in public institutions has saved taxpayers more than \$29 million since fiscal year 1999. Since its inception, ConserFund has loaned more than \$9 million to state agencies, colleges and universities, school districts and local governments for energy savings improvements (providing anticipated cost savings of more than \$23 million over the life of the projects).

ConserFund is available to finance a variety of energy conservation improvements such as: replacing and installing chillers of all sizes; implementing or upgrading energy management and control systems; modifying or installing heating ventilation and air conditioning systems; and installing light switch systems. For more information, call SCEO at **1-800-851-8899**.

- REBUILD SOUTH CAROLINA This partnership among the SCEO, the U.S. Department of Energy (DOE) and Rebuild America helps public agencies and non-profit institutions make energy-efficient improvements in their facilities. Rebuild South Carolina has several components:
 - ▶ Energy Use Audits: Energy use audits provide building owners with a program that includes: a complete description of the building's energy use characteristics; identification of opportunities for conserving energy through changes in the operation and maintenance of each building; a thorough evaluation of the opportunities for implementing energy conservation measures; and a detailed analysis of utility account billing to identify problems such as improper rate classification, incorrect measurement and incorrect calculation of charges.
 - Plan Development: From the information gathered in the audit phase, the SCEO assists clients in developing an implementation plan to prioritize retrofit activity.

- Examination of Financial Options: If a client does not have adequate internal funding for its project, Rebuild South Carolina offers financing options through the SCEO's ConserFund loan program, the State Treasurer's Office or commercial lenders. The goal is to arrange financing that covers payments from energy savings so that borrowers can repay the loans without the need for any additional revenue.
- Project Coordination: Once the audits have been completed, the scope of the project defined and financing options selected, the SCEO assists the client to ensure a smooth implementation of the project. A SCEO staff member is assigned to each client, assisting with questions concerning procurement, project development and other topics.
- Energy Consumption Monitoring: The SCEO assists the client in monitoring and verifying the estimated energy and cost savings for each project. The SCEO also offers a Web-based energy accounting system to track utility costs.
- ▶ **Training:** The SCEO provides energy management training.

What is necessary in order to participate in Rebuild South Carolina? Just call the SCEO at **1-800-851-8899** and ask for a Rebuild South Carolina Coordinator.

Purchasing and Operating Recommendations

Purchasing decisions for office equipment usually depend upon price, speed, reliability and quality. Many equipment purchasers fail to consider the cost of electricity to operate office equipment and the energy and equipment costs to remove the heat the equipment creates in a building.

In the United States, there are 50 state governments and about 3,043 county, 19,279 city and 16,656 town governments. Together, they spend an estimated \$12 billion per year on energy bills and another \$50-70 billion a year on energy-related products. If 50 percent of these entities purchased energy-efficient office equipment, the following savings could be realized annually.

Energy bills	\$1.2 billion
Electricity	
Gas and oil	
Carbon emissions	4.1 million metric tons

RECOMMENDATIONS FOR BUYING COMPUTERS

Energy consumption data for computers can sometimes be found on system specification sheets or through computer manufacturers' customer service personnel. It is important that purchasers obtain actual power consumption (or power-"draw") figures – not rated power figures. Rated power figures – found on the computer's nameplate – are generally two to three times higher than the actual power levels. The manufacturers want to assure that an adequate supply of electricity can be provided to the computer for the increased flexibility and expandability of newer computers. This allows users to add expansion cards (e.g., fax boards) and other add-on devices that increase the actual system power consumption. If choosing computers based on their energy performance, consider the following energy-saving options.

- Buy an ENERGY STAR computer.
- Consider buying a laptop computer.

When purchasing an ENERGY STAR computer several issues should be considered to maximize the energy-saving benefits of your new computer. Make sure:

- the computer's power-management features are activated;
- the ENERGY STAR computer is compatible with your network;
- that monitors are capable of entering a power-saving mode; and
- the computer can operate both before and after recovery from the power-saving mode.

RECOMMENDATIONS FOR OPERATING COMPUTERS

It is recommended that computer users:

- enable power-management features; and
- turn computers off at night, on weekends and when they aren't going to be used for an hour or longer.

RECOMMENDATIONS FOR BUYING MONITORS

To save energy, consider the following recommendations when purchasing monitors.

- Buy an ENERGY STAR monitor.
- Consider purchasing smaller-sized monitors.

- Consider a monochrome monitor.
- Consider an Active Matrix Color Liquid Crystal Display (LCD).

RECOMMENDATIONS FOR BUYING PRINTERS

There are several important factors to consider when choosing a printer. On the basis of energy use, it is recommended that shoppers:

- buy an ENERGY STAR printer;
- consider an ink jet printer;
- consider printer sharing; and
- consider a printer with double-sided printing capability.

RECOMMENDATIONS FOR OPERATING PRINTERS

The way a printer is operated can have a dramatic affect on its energy consumption. The following recommendations can ensure that a printer is operated in a manner that minimizes energy consumption.

- Enable power-management features.
- Turn printers off at night, on weekends and when they aren't going to be used for an hour or longer.
- Implement paper reducing strategies.
- Use electronic mail.

When Building, 'Green' Saves Money

Because so many buildings built before the 1990s have inefficient electrical equipment, consider a whole building approach to energy conservation when building.

According to the Office of Energy Efficiency and Renewable Energy, depending on the aggressiveness of the design, experience has shown that it costs no more than 10 percent more to build a high-performance building. Total energy costs are, on average, about 50 percent less than those for conventionally designed buildings.

WATT'S IT MEAN?

Be it in cars, in schools or at home, conserving energy is something everyone can do. While one person alone can make a small difference, a whole nation of conservationists makes a huge difference. In South

Carolina, if everyone could conserve 10 percent of the energy used, residents could save more than \$800 million to spend on other things and it would help to protect the environment. The responsibility to reduce our energy consumption rests with all of us.

Alternative Fuels

Alternative fuel is a fuel other than gasoline that may be used to power a vehicle. The Energy Policy Act of 1992 requires governments and utilities to use alternative fuels made in the United States to power some of the vehicles in their fleets. The fuels that must be used are natural gas, propane, ethanol and biodiesel.

In 1996, governments and utilities were required to begin buying alternative fuel vehicles (AFVs). The percentage of AFVs was increased each year, and by 2001, 75 percent of the **new** vehicles had to be capable of using alternative fuels. At the end of fiscal year 2005, South Carolina state government had 1,931 AFVs according to the SCEO.

WHY ARE ALTERNATIVE FUELS IMPORTANT?

Despite the passage of the Energy Policy Act, the demand for oil in the United States continues to grow. Currently, Americans are using about 20.4 million barrels of oil a day – the most in our history. Nearly 55 percent of the oil Americans consume comes from foreign countries with the rest produced here. Our dependence on oil from other countries makes the United States vulnerable and jeopardizes national security.

The overuse of fossil fuels also has caused significant air pollution throughout the United States. When most people think of air pollution, they think of Los Angeles or Houston. But Charlotte and Atlanta – our neighbors to the north and west – have some of the highest pollution rates in the country. Even in South Carolina, air quality is threatened by emissions from gasoline-powered cars and trucks. Fortunately, alternative fuels can help ease those problems as they burn more cleanly than gasoline and diesel fuel.

THE ALTERNATIVE FUELS

 Compressed Natural Gas and Liquefied Natural Gas: Natural gas is domestically produced and readily available in the United States.
 Natural gas also is clean burning and produces less pollutants than reformulated gasoline. Natural gas can either be stored on board a

vehicle in tanks as compressed natural gas (CNG) or cryogenically cooled to a liquid state - liquefied natural gas (LNG). Natural gas is a mixture of hydrocarbons - mainly methane - and is produced either from gas wells or in conjunction with crude oil production. Natural gas also is used for heating and cooling homes, cooking, clothes drying and in businesses. Although one of the cleaner-burning alternative fuels, natural gas is not yet common or used very widely. The vehicles typically cost about \$3,500-\$5,000 more than a regular gas vehicle and the refueling stations cost anywhere from \$400,000 for a "fast-fill" station that fuels each vehicle in just a few minutes to \$3,500 for an in-home compressor that fills a vehicle overnight. The Central Midlands Regional Transit Authority (CMRTA) currently runs seven CNG buses in its fleet. It also uses the CNG bus in its SmartRide program, a joint venture between DOE, DHEC, CMRTA and SCEO to reduce ground level ozone on Ozone Action Days by offering free rides to the public on these days.

- Propane (Liquefied Propane Gas, LPG) is a popular alternative fuel choice. In fact, propane has been used widely for years in agricultural communities. Like natural gas, propane produces fewer vehicle emissions than reformulated gasoline. Propane is produced as a by-product of natural gas processing and crude oil refining. Propane is a simple mixture of hydrocarbons, mainly propane/propylene and butane/butylene. Propane also is a popular choice for home heating and outdoor cooking. Propane vehicles also cost more than their gasoline counterparts. However, fueling stations are fairly inexpensive. More than 350,000 vehicles, mostly in commercial fleets, are traveling the nation's highways under propane power.
- Electricity can be used to power vehicles. Electric vehicles (EVs) store electricity in batteries. EV batteries have a limited storage capacity and must be replenished by plugging the vehicle into a recharging unit. The electricity for recharging the batteries comes from a special electrical outlet in the home or business, or from distributed renewable sources such as solar or wind energy. EVs are called "zero-emission vehicles" because they release no harmful emissions. The cost of "refueling" an EV is low, but an EV certified to run on the highway is very expensive. Although newer technology shows promising developments, most EVs have a range of only 50-100 miles before recharging is needed.
- Ethanol (E85) is a blend of 85 percent ethanol and 15 percent gasoline. Ethanol is an alcohol-based fuel produced by fermenting and distilling starch crops that have been converted into simple sugars.

Typical feedstocks for this fuel include corn, barley and wheat. Ethanol also can be produced from "cellulosic biomass" such as trees and grasses. Most ethanol used in the United States today is made from corn. E85 can be used in "flexible-fuel vehicles" (FFVs) These vehicles also can run on pure gasoline. FFVs are very common in the United States today – many auto manufacturers now offer them and are part of their standard inventory. Unlike other AFVs, there is no additional cost for purchasing this vehicle. Because of this, and also because they can run on gasoline, they are a popular choice for fleet managers. Ethanol fuel is less expensive than gasoline at the pump and state agencies are encouraging their fleet drivers to use E85 in all FFVs to save money.

Biodiesel is manufactured from vegetable oils or recycled restaurant greases. Biodiesel is safe, biodegradable and reduces serious air pollutants such as particulates, carbon monoxide, hydrocarbons and air toxins. Blends of 20 percent biodiesel with 80 percent petroleum diesel (B20) can be used in any diesel vehicle. It also can be used in its pure form (B100), but may require certain engine modifications to avoid maintenance and performance problems.

S.C. AFV REFUELING STATION LOCATIONS

As AFVs are becoming more prevalent in South Carolina government fleets, available fueling stations are growing in number. Currently, nine publicly-accessible ethanol stations exist – one in Aiken, two in Greenville, and six in Columbia. These stations have close interstate access so both South Carolina citizens and travelers alike can refuel their vehicles with E85. The University of South Carolina will also be integrating an ethanol refueling station for use by its fleet in Columbia. There are two publicly accessible B20 refueling stations – one in Aiken and one in Greenville. B20 is currently one to three cents more expensive than the price of diesel; however use of this cleaner burning fuel is on the rise around the state because of its reduced emissions. The City of Rock Hill currently switched its 126 fleet vehicles over to B20. Five CNG fueling stations can be found in South Carolina – fast-fill stations in Columbia and York County, and slow-fill stations in the cities of Rock Hill and Clemson, as well as Greenville County.

WHERE DO WE GO FROM HERE?

Alternative fuel use is very important for our country, because of dependence on imported oil and national air quality problems. There are many organizations in South Carolina that want to help increase the types and amount of alternative fuel used. The Palmetto State Clean Fuels

Coalition (PSCFC) is organizing stakeholder groups and promoting their efforts through marketing, meetings and education. This local group is part of a national effort called "Clean Cities" – coordinated

by the U.S. Department of Energy. The PSCFC was designated as a Clean Cities Coalition on August 4, 2003, and has a number of initiatives in place to promote alternative fuels and alternative fuel vehicles in the state.

The PSCFC is committed to developing stronger networks of

alternative fuel users in the state. It is reaching out to all existing organizations and programs that show a similar interest in improving the nation's energy security by lessening dependence on foreign oil and reducing emissions of ozone, carbon monoxide and particulate matters from motor vehicle usage.

School Bus Idling

When buses idle, both fuel and money are wasted. For example, a school bus burns about a half gallon of diesel fuel for each hour it idles. If a school district operates 50 buses and each bus reduces its idling time by 30 minutes per day, based on a cost of \$1.73 per gallon of diesel fuel, the school district could save \$3,892.50 per school year. Adopting better idling practices, retrofitting buses with modern emission control technology, using cleaner fuels and fuel additives as well as replacing older buses can significantly reduce diesel emissions emitted by school buses. Other recommended actions include limiting idling time during early morning warm-up, reinforcing smart driving practices and assigning clean-running buses to the longest routes.

Students at CrossRoads Middle School in Irmo, S.C. sought to reduce air pollution through reduced idling of cars and buses on campus as part of the Green Steps Schools program. Students accomplished this by involving parents, faculty, staff and bus drivers as well as placing "No Idling" signs in the bus and carpool lanes. The school also incorporated a voluntary "no idling" policy into the parent handbook. As a result of the student's efforts, CrossRoads has seen a reduction in the number of visits to the school nurse's office due to respiratory problems. Visit www.greenstepschools.com for more information.

Other Resources

ENERGY

Energy Star www.energystar.gov

Federal Energy Management Program 1-800-363-3732 www.eere.energy.gov/femp

> GreenBiz.com www.greenbiz.com

How to Reduce Your Energy Costs www.scdhec.gov/lwm/rcc/forms/How To Recycle Your Energy Costs.pdf

Palmetto State Clean Fuels Coalition www.state.sc.us/energy/Transportation/ clean cities.htm

Preparing an Energy Element for the Comprehensive Plan www.energy.sc.gov/Public/planning.htm

> S.C. Energy Office 1-800-851-8899 www.energy.sc.gov

U.S. Department of Energy -Energy Efficiency and Renewable Energy www.eere.energy.gov

WASTE REDUCTION

Association of Lighting and Mercury Recyclers www.almr.org

DHEC's Center for Waste Minimization www.scdhec.gov/eqc/admin/html/ wastemin.html

DHEC's Office of Solid Waste Reduction and Recycling 1-800-768-7348 www.scdhec.gov/recycle

DHEC's Small Business Assistance Program 1-800-819-9001

www.scdhec.gov/egc/admin/html/sbap.asp

Index of Waste Minimization Resources www.scdhec.gov/eqc/admin/html/ wmrindex.html

Inform - Strategies for a Better Environment www.informinc.org/ fact P3fluorescentlamps.php

> Lamp Recycle.org www.nema.org/lamprecycle

Rechargeable Battery Recycling Corporation www.rbrc.com

S.C. Business Recycling Assistance Program 1-800-768-7348 www.scdhec.gov/brap

> S.C. Materials Exchange www.scdhec.gov/scme

S.C. Recycling Market Development Advisory Council (803) 737-0477 www.sccommerce.com/recycle.html

U.S. Environmental Protection Agency (U.S. EPA) - Technical Issues About Universal Waste www.epa.gov/epaoswer/hazwaste/id/ univwast/quest.htm#exempted

> U.S. EPA's WasteWise Program www.epa.gov/wastewise

MORE RESOURCES

Green Steps Schools www.greenstepschools.com

Institutional Purchasing Reference Tool www.newdream.org/procure

Office of the Federal Environmental Executive www.ofee.gov

S.C. Recycling Coordinators www.scdhec.gov/recycle/html/counties.html

U.S. EPA's Resource Conservation Challenge www.epa.gov/rcc

U.S. Green Building Council - S.C. Chapter www.usabcsc.ora







